Complete Summary

GUIDELINE TITLE

Initial diagnosis of lung cancer: ACCP evidence-based clinical practice guidelines. (2nd Edition)

BIBLIOGRAPHIC SOURCE(S)

Rivera MP, Mehta AC, American College of Chest Physicians. Initial diagnosis of lung cancer: ACCP evidence-based clinical practice guidelines (2nd edition). Chest 2007 Sep;132(3 Suppl):131S-48S. [185 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Rivera MP, Detterbeck F, Mehta AC. Diagnosis of lung cancer: the guidelines. Chest 2003 Jan;123(1 Suppl):129S-36S.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Lung cancer

GUIDELINE CATEGORY

Diagnosis

CLINICAL SPECIALTY

Family Practice
Oncology

Pulmonary Medicine
Radiation Oncology
Thoracic Surgery

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Nurses
Patients
Physicians
Psychologists/Non-physician Behavioral Health Clinicians
Social Workers

GUIDELINE OBJECTIVE(S)

To determine the test performance characteristics of various modalities for the diagnosis of suspected lung cancer

TARGET POPULATION

Patients with suspected lung cancer who have abnormal chest radiograph findings or symptoms caused by either local or systemic effects of the tumor

INTERVENTIONS AND PRACTICES CONSIDERED

1. Sputum cytology
2. Thoracentesis
3. Fine-needle aspiration
4. Flexible bronchoscopy (FB) with:
    - Transbronchial needle aspiration (TBNA)
    - Endobronchial ultrasound–needle aspiration (EBUS-NA)
    - Esophageal ultrasound–needle aspiration (EUS-NA)
    - Transthoracic needle aspiration (TTNA)
    - Mediastinoscopy
    - Radial probe ultrasound
5. Thoracoscopy
6. Biopsy

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic tests
- Accuracy of diagnostic modalities (diagnostic error rate)

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Overview

The American College of Chest Physicians (ACCP) chose the Duke University Center for Clinical Health Policy Research to perform formal systematic reviews of the current evidence in the five new non-small cell lung cancer (NSCLC) topic areas, as well as to provide a search for the existing guidelines, systematic reviews, and meta-analyses in all of the topics areas. In addition, the Agency for Healthcare Quality and Research) AHRQ agreed to fund the BlueCross BlueShield Association Technology Evaluation Center to perform the formal systematic review of literature on small cell lung cancer (SCLC). The Health Outcomes Research Group of the Department of Epidemiology and Biostatistics at Memorial Sloan-Kettering Cancer Center conducted a full-scale review of the literature since the first set of guidelines in the area of screening for lung cancer to assist that particular writing group.

The formal systematic reviews of the five new topic areas were guided by the appropriate chapter editors and their writing committees, in concert with the Executive Committee of the panel.

The two EPC research teams conducted a variety of systematic computerized bibliographic database searches including the following: (1) a search for systematic reviews, guidelines, and meta-analyses published since the last ACCP lung cancer guideline (MEDLINE, The Cochrane Library, National Guidelines Clearinghouse); (2) targeted searches for reviews in each of five selected treatment sections (solitary pulmonary nodules, stage I and II, stage IIIA, stage IIIB, stage IV); these searches, run in OVID version of MEDLINE, were performed in July and August 2005 and were limited to publication years since 1995, English language, and human subjects; and (3) searches related to SCLC are described in the evidence chapter on SCLC. Search terms included the medical subject heading terms lung neoplasms (exploded) and bronchial neoplasms for the lung cancer concept. Each topic search utilized key words specific to the key questions of interest (complete search strategies are available on request from the authors).

Strategy Specific for Initial Diagnosis of Lung Cancer

To update previous recommendations on the initial diagnosis of lung cancer, a systematic search of MEDLINE, Healthstar, and Cochrane Library databases to July 2004, and print bibliographies was performed to identify studies comparing the results of sputum cytology, bronchoscopy, transthoracic needle aspiration (TTNA), or biopsy with histologic reference standard diagnoses among at least 50 patients with suspected lung cancer.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus
Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

High Randomized controlled trials (RCTs) without important limitations or overwhelming evidence from observational studies*

Moderate RCTs with important limitations (inconsistent results, methodologic flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies*

Low or very low Observational studies or case series

*Although the determination of magnitude of the effect based on observational studies is often a matter of judgment, the guideline developers offer the following suggested rule to assist this decision: a large effect would be a relative risk >2 (risk ratio < 0.5) [which would justify moving from weak to moderate], and a very large effect is a relative risk > 5 (risk ratio < 0.2) [which would justify moving from weak to strong]. There is some theoretical justification in the statistical literature for these thresholds (the magnitude of effect that is unlikely or very unlikely to be due to residual confounding after adjusted analysis). However, once the decision is made, authors should be explicit in justifying their decisions.

METHODS USED TO ANALYZE THE EVIDENCE

Meta-Analysis
Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Quality of evidence is scored in three categories with high-quality evidence obtained from randomized controlled trials (RCTs) without important methodologic limitations based on the study design, the consistency of the results, and the directness of the evidence. In extraordinary circumstances, significant and consistent evidence from observational studies could also be ranked as high quality. RCTs with important methodologic limitations or flaws, inconsistent results, or indirect or imprecise results would be scored as medium quality, as well as exceptionally strong evidence from observational studies. Other observational studies or case-series data would fall into the low quality of evidence category. It is the interface of the quality of the evidence and the balance of benefits to harms or burdens that determines the strength of the recommendation, with a 1A recommendation being the strongest and 2C the weakest.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus
Informal Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Writing committees studied the evidence and summary tables or reviewed the literature for their assigned topics, developing their arguments for the recommendations and suggested grading of those recommendations that were put forth for early drafts. The Executive Committee of the panel, composed of the Chair, Vice-Chair, methodologist, and both project managers, reviewed drafts of each chapter of the manuscript during the writing process. Sections that were determined to be potentially overlapping were shared among the appropriate chapter editors, and conference calls were organized to coordinate the placement of these sections and to confirm that there would be no conflicting information or recommendations.

A conference of the panel was convened in July 2006, prior to which time all panelists, including representatives from the invited organizations, were requested to review the complete manuscript and identify recommendations for which the proposal, wording, or grading were determined to be controversial or could be interpreted as controversial by others, incorrectly evolved from the evidence, disagreement existed with regard to the proposal or the grading, or required full panel discussion and further review for any reason. When the panelists who were present were not in unanimous agreement with the proposed recommendations or the grading of the recommendations, informal group consensus techniques were employed. After the meeting, a series of conference calls were convened to finish the discussions and finalize the recommendations. There were a few chapters for which there was insufficient time for full dialogue during the meeting; in the interest of ensuring that the recommendations followed the evidence, the conference calls were necessary. This process ensured the "buy-in" of the panelists and was deemed to be a worthwhile effort.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grade of Recommendations Scale

Grade	Recommendation
1A	Strong
1B	Strong
1C	Strong
2A	Weak
2B	Weak
2C	Weak

Relationship of Strength of the Supporting Evidence to the Balance of Benefits to Risks and Burdens

Balance of Benefits to Risks and Burdens				
Quality of Evidence	**Benefits Outweigh Risks/Burdens**	**Risks/Burdens Outweigh Benefits**	**Evenly Balanced**	**Uncertain**

Balance of Benefits to Risks and Burdens				
Quality of Evidence	**Benefits Outweigh Risks/Burdens**	**Risks/Burdens Outweigh Benefits**	**Evenly Balanced**	**Uncertain**
High	1A	1A	2A	
Moderate	1B	1B	2B	
Low or very low	1C	1C	2C	2C

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Following final chapter revisions and incorporation of these ultimate recommendations and grading, a concluding review was conducted by the guideline panel Executive Committee. The guidelines were then submitted for review and approval to the American College of Chest Physicians Health and Science Policy Committee (ACCP HSP) Committee, as well as the Thoracic Oncology Network of the college.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the strength of evidence and recommendation grades (1A-2C) follow the recommendations.

1. In patients suspected of having small cell lung cancer [SCLC] based on the radiographic and clinical findings, it is recommended that the diagnosis be confirmed by the easiest method (e.g., sputum cytology, thoracentesis, fine-needle aspiration [FNA], and bronchoscopy including transbronchial needle aspiration [TBNA], endobronchial ultrasound–needle aspiration (EBUS-NA), and esophageal ultrasound–needle aspiration (EUS-NA), as dictated by the patient's presentation. **Grade of recommendation, 1C**
2. In patients suspected of having lung cancer who have an accessible pleural effusion, thoracentesis is recommended to diagnose the cause of the pleural effusion. **Grade of recommendation, 1C**
3. In patients suspected of having lung cancer who have an accessible pleural effusion, if the pleural fluid cytology finding is negative (after at least two thoracenteses), thoracoscopy is recommended as the next step if establishing the cause of the pleural effusion is thought to be clinically important. **Grade of recommendation, 1C**

4. In patients suspected of having lung cancer who have a solitary extrathoracic site that is suspicious of a metastasis, it is recommended that tissue confirmation of the metastatic site be obtained if an FNA or biopsy of the site is feasible. **Grade of recommendation, 1C**
5. In patients suspected of having lung cancer, who have lesions in multiple distant sites that are suspected of metastases but in whom the biopsy of a metastatic site would be technically difficult, it is recommended that diagnosis of the primary lung lesion be obtained by the easiest method (e.g., sputum cytology, bronchoscopy with TBNA or EBUS-NA, EUS-NA, or transthoracic needle aspiration [TTNA]). **Grade of recommendation, 1C**
6. In patients suspected of having lung cancer, who have extensive infiltration of the mediastinum based on radiographic studies, it is recommended that the diagnosis of lung cancer be established by the easiest and safest method (e.g., bronchoscopy with TBNA, EBUS-NA, EUS-NA, TTNA, or mediastinoscopy). **Grade of recommendation, 1C**
7. In patients suspected of having lung cancer, who present with a central lesion with or without radiographic evidence of metastatic disease, in whom a semi-invasive procedure such as bronchoscopy or TTNA might pose a higher risk, sputum cytology is recommended as an acceptable method of establishing the diagnosis. However, the sensitivity of sputum cytology varies by the location of the lung cancer. It is recommended that further testing be performed with a nondiagnostic sputum cytology finding if suspicion of lung cancer remains. **Grade of recommendation, 1C**
8. In patients suspected of having lung cancer who have a central lesion, bronchoscopy is recommended to confirm the diagnosis. However, it is recommended that further testing be performed if bronchoscopy results are nondiagnostic and suspicion of lung cancer remains. **Grade of recommendation, 1C**
9. In expert hands, use of radial probe ultrasound (US) device can increase the diagnostic yield of flexible bronchoscopy (FB) while dealing with peripheral lesions of < 20 mm in size. Its use can be considered prior to referring the patient for TTNA. **Grade of recommendation, 2B**
10. In patients suspected of having lung cancer who have a small (< 2 cm) peripheral lesion, and who require tissue diagnosis before further management can be planned, TTNA is recommended. However, it is recommended that further testing be performed if TTNA results are nondiagnostic and suspicion of lung cancer remains. **Grade of recommendation, 1B**
11. In a patient suspected of having lung cancer, the diagnosis of non-small cell lung cancer (NSCLC) made on cytology findings (e.g., sputum, TTNA, or bronchoscopic specimens) is highly reliable and can be accepted with a high degree of certainty. **Grade of recommendation, 1B**
12. The possibility of an erroneous diagnosis of SCLC in a cytology specimen must be kept in mind if the clinical presentation or clinical course is not consistent with that of SCLC. In such a case, it is recommended that further testing (i.e., biopsy for histologic evaluation) be performed to establish a definitive cell type. **Grade of recommendation, 1B**

Definitions:

Quality of Evidence Scale

High - Randomized controlled trials (RCTs) without important limitations or overwhelming evidence from observational studies*

Moderate - RCTs with important limitations (inconsistent results, methodologic flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies*

Low or very low - Observational studies or case series

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Grade of Recommendations Scale

Grade	Recommendation
1A	Strong
1B	Strong
1C	Strong
2A	Weak
2B	Weak
2C	Weak

Relationship of Strength of the Supporting Evidence to the Balance of Benefits to Risks and Burdens

Balance of Benefits to Risks and Burdens				
Quality of Evidence	**Benefits Outweigh Risks/Burdens**	**Risks/Burdens Outweigh Benefits**	**Evenly Balanced**	**Uncertain**
High	1A	1A	2A	
Moderate	1B	1B	2B	
Low or very low	1C	1C	2C	2C

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate diagnosis in patients with suspected lung cancer
- The main goals in selecting a specific diagnostic modality are to (1) maximize the yield of the selected procedure for both diagnosis and staging and (2) to avoid unnecessary invasive tests for the patient, with special attention to the projected treatment plan.

POTENTIAL HARMS

- Risk of false-positive and false-negative test results
- Risks involved in invasive test procedures

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The publication of the *Diagnosis and Management of Lung Cancer: ACCP Evidence-Based Clinical Practice Guidelines; Second Edition* in *CHEST* is the first of two dissemination vehicles. The circulation of the journal is 23,000 subscribers and libraries, including six translations and distribution to 107 countries. All subscribers received a copy of this full-text guideline. The American College of Chest Physicians (ACCP) Clinical Resource on Lung Cancer is composed of a printed publication and an accompanying CD-ROM, containing a quick reference guide for physicians and other health-care providers, patient-targeted educational materials, and a set of slides for use in educational or clinical contexts. In addition, the recommendations and grading are personal digital assistant downloadable from the clinical resource. This product is available for purchase from the ACCP. The patient education materials are accessible free of charge on www.chestnet.org.

The implementation and translation of evidence-based clinical practice guidelines facilitates knowledge uptake, critical for practice change, and should ultimately lead to better patient-focused care. The HSP Subcommittee on Implementation has proposed to collaborate with the Governors, Thoracic Oncology Network, and other groups within the ACCP to disseminate and implement the guidelines in their local communities. Residency and specialty training programs are encouraged to use the guidelines in journal clubs and grand rounds. Other organizations that were invited to send representatives to the final conference and review the proposed drafts were also requested to endorse the guidelines and market them to their membership through their own communication channels.

IMPLEMENTATION TOOLS

Patient Resources
Resources

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Rivera MP, Mehta AC, American College of Chest Physicians. Initial diagnosis of lung cancer: ACCP evidence-based clinical practice guidelines (2nd edition). Chest 2007 Sep;132(3 Suppl):131S-48S. [185 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003 Jan (revised 2007 Sep)

GUIDELINE DEVELOPER(S)

American College of Chest Physicians - Medical Specialty Society

SOURCE(S) OF FUNDING

American College of Chest Physicians

GUIDELINE COMMITTEE

American College of Chest Physicians (ACCP) Expert Panel on Lung Cancer Guidelines

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Primary Authors: M. Patricia Rivera, MD, FCCP; Atul C. Mehta, MB, FCCP

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Funding for both the evidence review and guideline development was supported by educational grants from AstraZeneca LP, Bristol-Myers Squibb Company, Eli Lilly and Company, Genentech, and Sanofi-Aventis. Representatives from these companies were neither granted the right of review, nor were they allowed participation in any portion of the guideline development process. This precluded participation in either conference calls or conferences. No panel members or ACCP reviewers were paid any honoraria for their participation in the development and review of these guidelines.

The ACCP approach to the issue of potential or perceived conflicts of interest established clear firewalls to ensure that the guideline development process was not influenced by industry sources. This policy is published on the ACCP Web site at www.chestnet.org. All conflicts of interest within the preceding 5 years were required to be disclosed by all panelists, including those who did not have writing responsibilities, at all face-to-face meetings, the final conference, and prior to submission for publication. The most recent of these conflict of interests are documented in this guideline Supplement. Furthermore, the panel was instructed in this matter, verbally and in writing, prior to the deliberations of the final conference. Any disclosed memberships on speaker's bureaus, consultant fees, grants and other research monies, and any fiduciary responsibilities to industry were provided to the full panel in writing at the beginning of the conference and at submission for publication.

ENDORSER(S)

American Association for Bronchology - Disease Specific Society
American Association of Thoracic Surgery - Medical Specialty Society
American College of Surgeons - Medical Specialty Society
American Society for Therapeutic Radiology and Oncology
Asian Pacific Society of Respirology - Disease Specific Society
Oncology Nursing Society - Professional Association
Society of Thoracic Surgeons - Medical Specialty Society
World Association of Bronchology - Disease Specific Society

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Rivera MP, Detterbeck F, Mehta AC. Diagnosis of lung cancer: the guidelines. Chest 2003 Jan;123(1 Suppl):129S-36S.

GUIDELINE AVAILABILITY

Electronic copies: Available to subscribers of Chest - The Cardiopulmonary and Critical Care Journal.

Print copies: Available from the American College of Chest Physicians, Products and Registration Division, 3300 Dundee Road, Northbrook IL 60062-2348.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

Executive Summary:

- Alberts MW. Diagnosis and management of lung cancer executive summary. Chest 2007 Sep;132(3 Suppl):1S-19.

Background Articles:

- Alberts WM. Introduction: diagnosis and management of lung cancer. Chest 2007 Sep;132(3 Suppl):20S-22.
- McCrory DC, Lewis SZ, Heitzer J, Colice GL, Alberts WM. Methodology for lung cancer evidence review and guideline development. Chest 2007 Sep;132(3 Suppl):23S-28.
- Alberg AJ, Ford JG, Samet JM. Epidemiology of lung cancer. Chest 2007 Sep;132(3 Suppl):29S-55.

Electronic copies: Available to subscribers of Chest - The Cardiopulmonary and Critical Care Journal.

Print copies: Available from the American College of Chest Physicians, Products and Registration Division, 3300 Dundee Road, Northbrook IL 60062-2348.

The following is also available:

- ACCP clinical resources: Diagnosis and management of lung cancer: ACCP evidence-based clinical practice guidelines (2nd edition).

Available from the American College of Chest Physicians Web site.

PATIENT RESOURCES

The following are available:

- Lung cancer guides: lung cancer...am I at risk? Patient education guide. Northbrook (IL): American College of Chest Physicians, 2004. 12 p.
- Lung cancer guides: What if I have a spot on my lung? Do I have cancer? Patient education guide. Northbrook (IL): American College of Chest Physicians, 2004. 16 p.
- Lung cancer guides: living with lung cancer. Patient education guide. Northbrook (IL): American College of Chest Physicians, 2004. 12 p.
- Lung cancer guides: advanced lung cancer: issues to consider. Patient education guide. Northbrook (IL): American College of Chest Physicians, 2004. 12 p.

Electronic copies: Available in Portable Document Format (PDF) from the American College of Chest Physicians (ACCP) Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This NGC summary was completed by ECRI on July 22, 2003. The information was verified by the guideline developer on August 18, 2003. This NGC summary was updated by ECRI Institute on November 8, 2007. The updated information was verified by the guideline developer on December 21, 2007.

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